FIG. 1

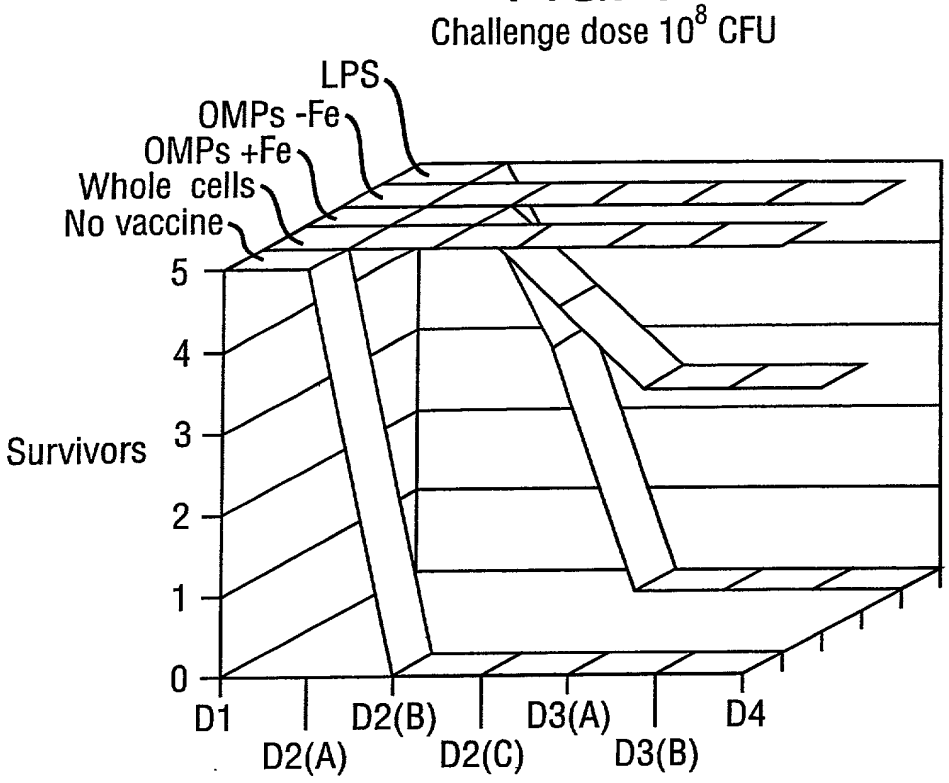
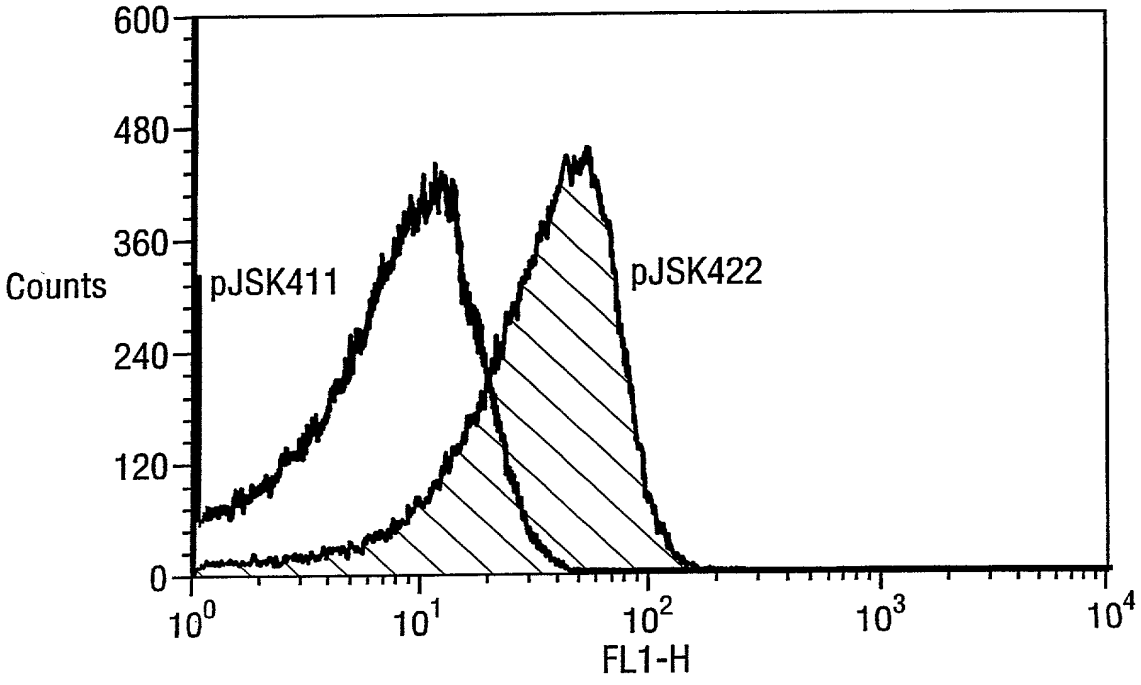

Challenge dose 10^8 CFU
LPS
OMPs -Fe
OMPs +Fe
Whole cells
No vaccine
Survivors
5
4
3
2
1
0
D1
D2(A)
D2(B)
D2(C)
D3(A)
D3(B)
D4

FIG. 6


600
480
360
240
120
0
Counts
pJSK411
pJSK422
10^0
10^1
10^2
10^3
10^4
FL1-H

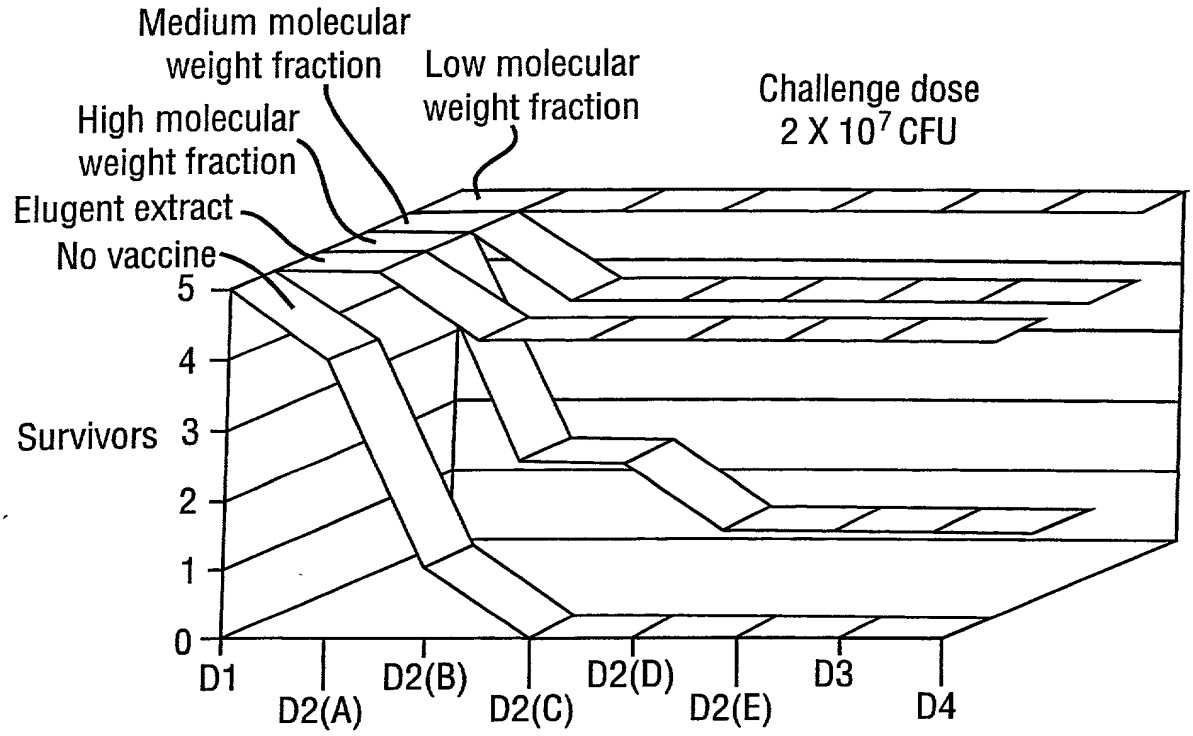

Medium molecular weight fraction
Low molecular weight fraction
Challenge dose 2 X 10^7 CFU
High molecular weight fraction
Elugent extract
No vaccine
Survivors
5
4
3
2
1
0
D1
D2(A)
D2(B)
D2(C)
D2(D)
D2(E)
D3
D4

FIG. 2A

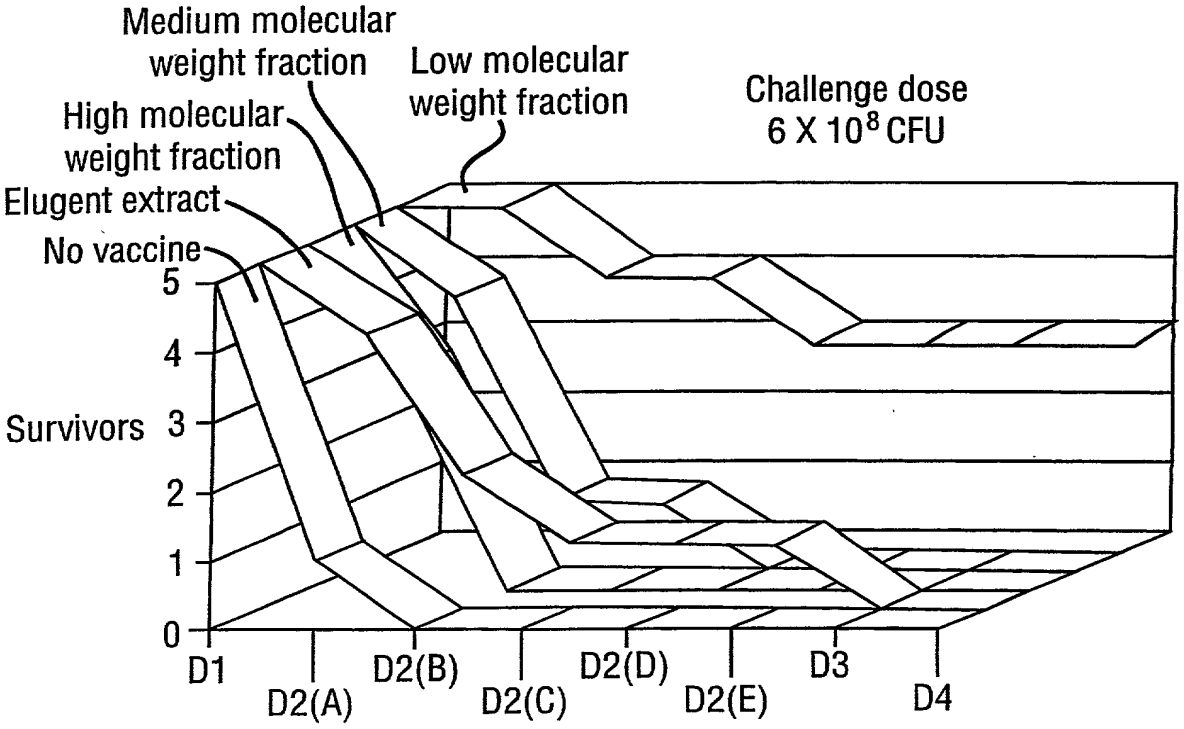

Medium molecular weight fraction
Low molecular weight fraction
Challenge dose 6 X 10^8 CFU
High molecular weight fraction
Elugent extract
No vaccine
Survivors
5
4
3
2
1
0
D1
D2(A)
D2(B)
D2(C)
D2(D)
D2(E)
D3
D4

FIG. 2B

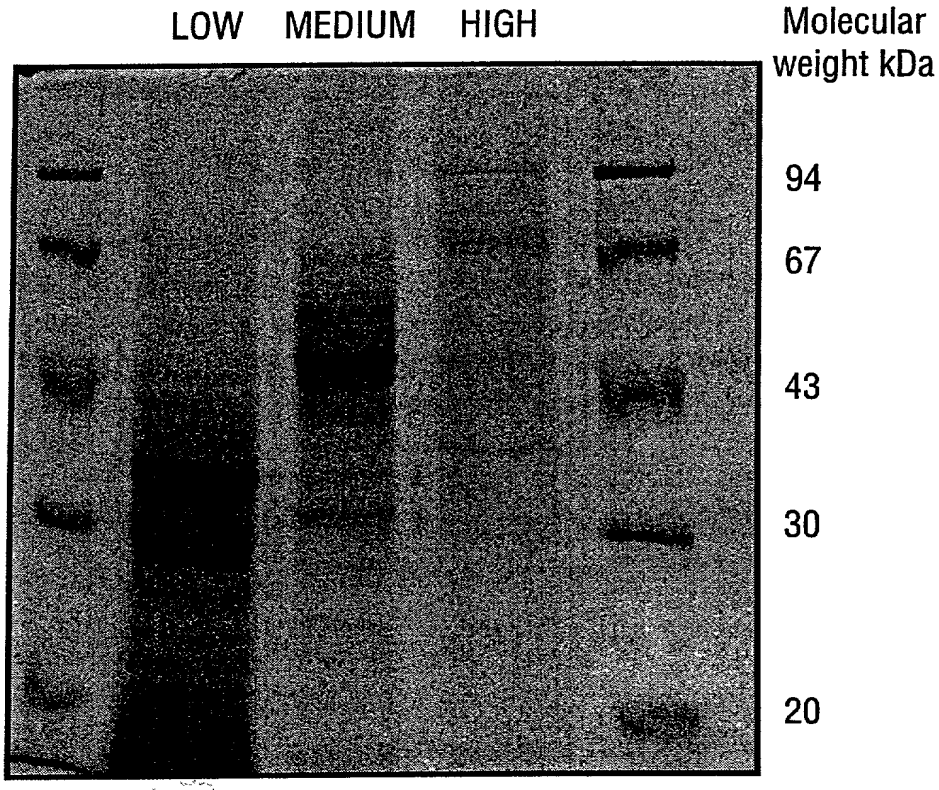


FIG. 3

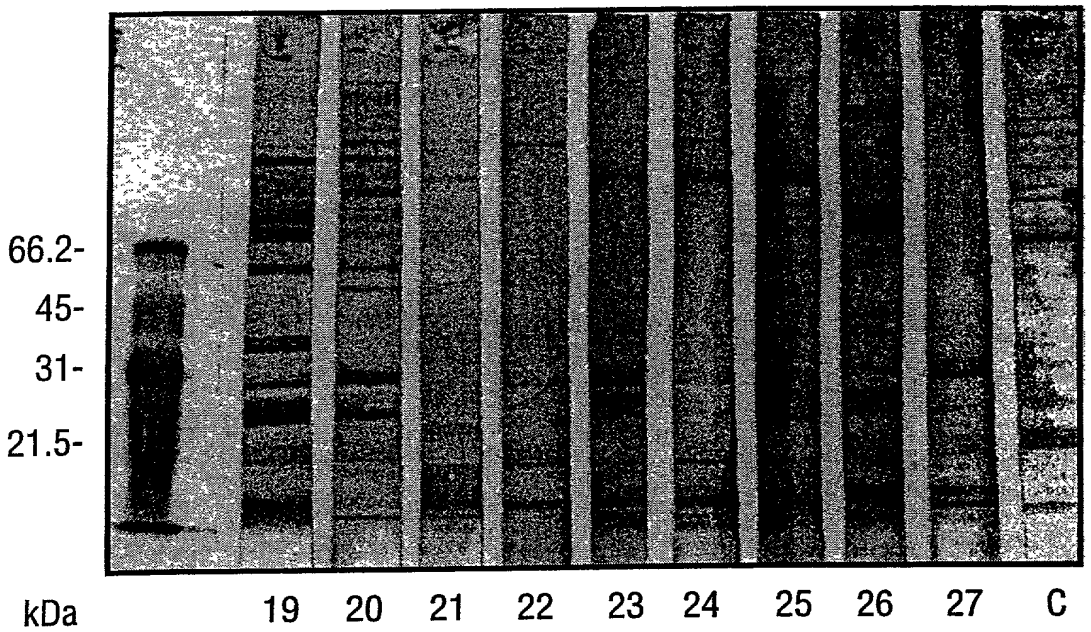
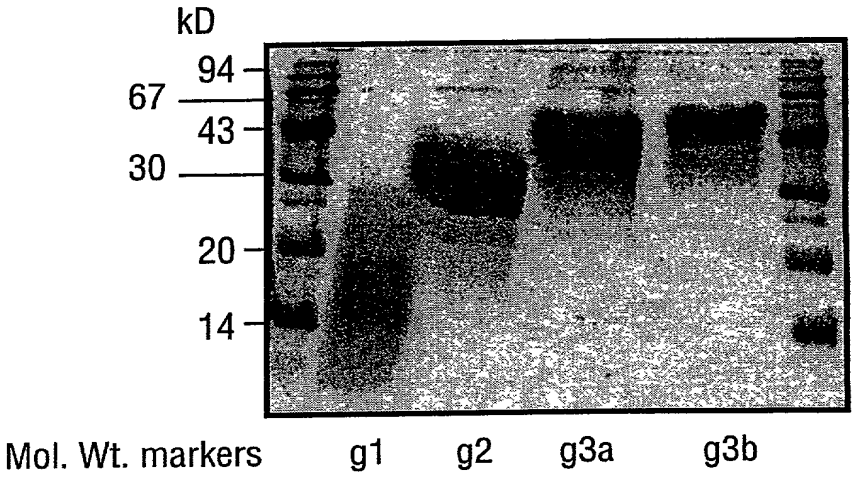

66.2-
45-
31-
21.5-
kDa
19
20
21
22
23
24
25
26
27
C

FIG. 4


kD
94
67
43
30
20
14
Mol. Wt. markers
g1
g2
g3a
g3b

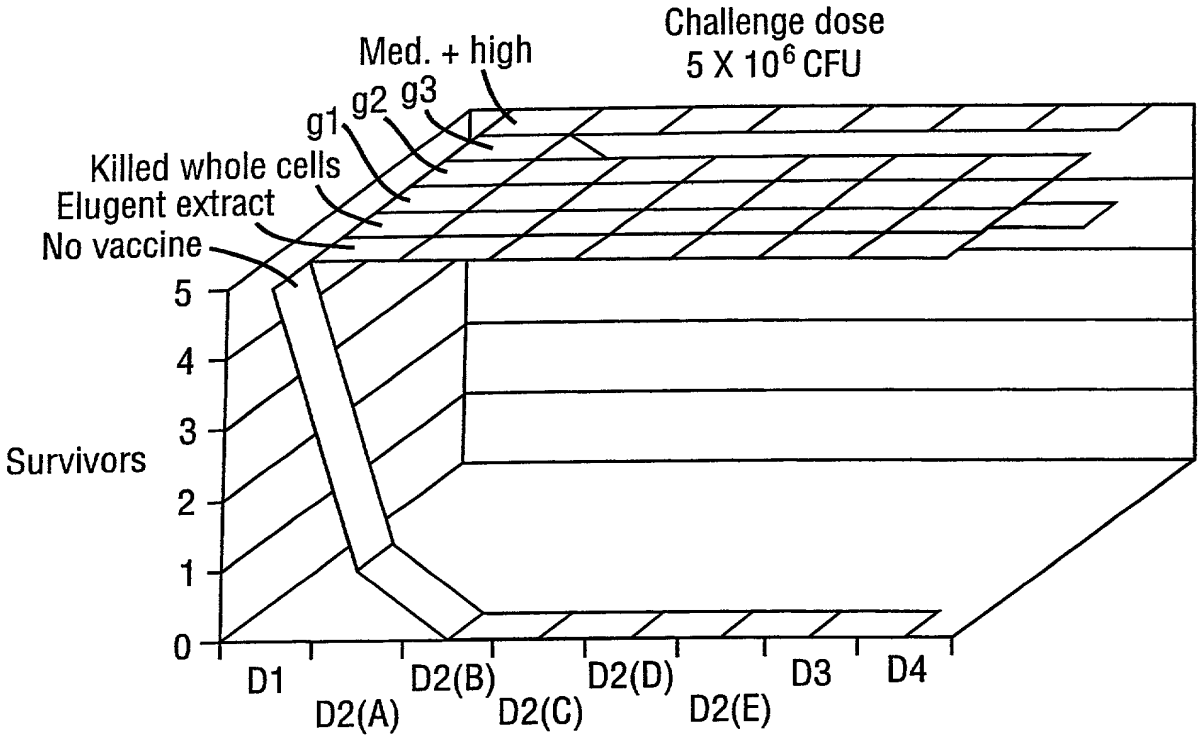

Challenge dose
5 X 10^6 CFU
Med. + high
g1 g2 g3
Killed whole cells
Elugent extract
No vaccine
Survivors
5
4
3
2
1
0
D1
D2(A)
D2(B)
D2(C)
D2(D)
D2(E)
D3
D4

FIG. 5

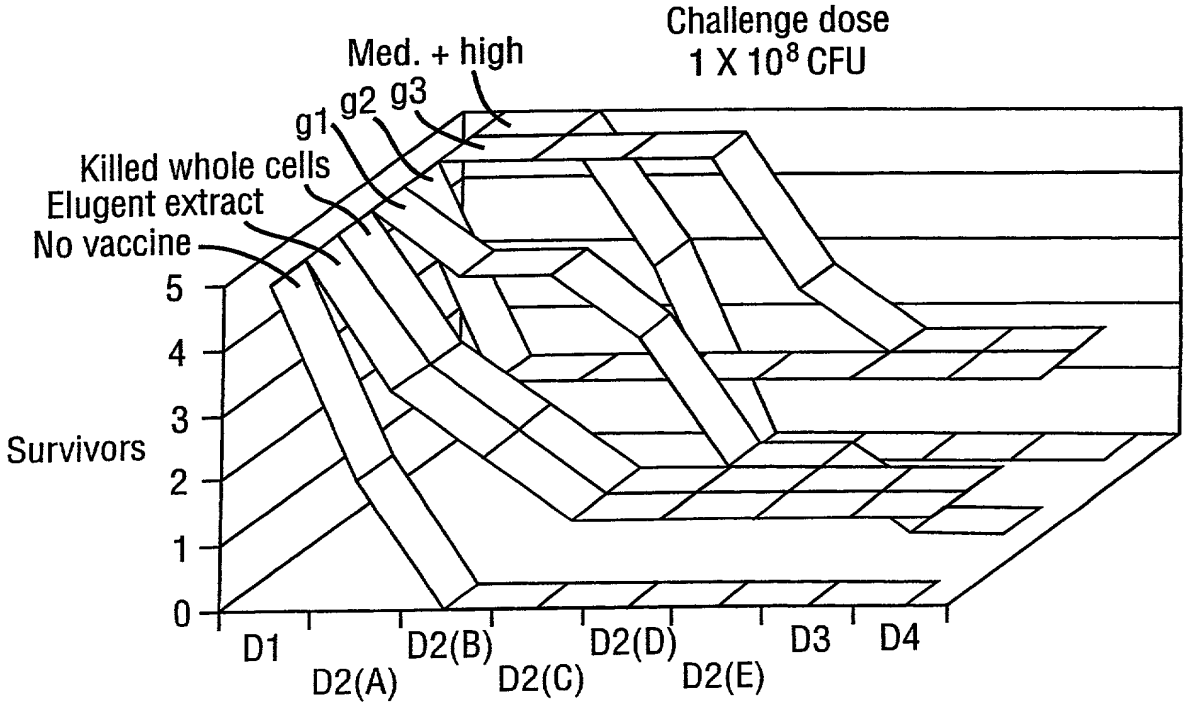

Challenge dose
1 X 10^8 CFU
Med. + high
g1 g2 g3
Killed whole cells
Elugent extract
No vaccine
Survivors
5
4
3
2
1
0
D1
D2(A)
D2(B)
D2(C)
D2(D)
D2(E)
D3
D4

Fig. 7

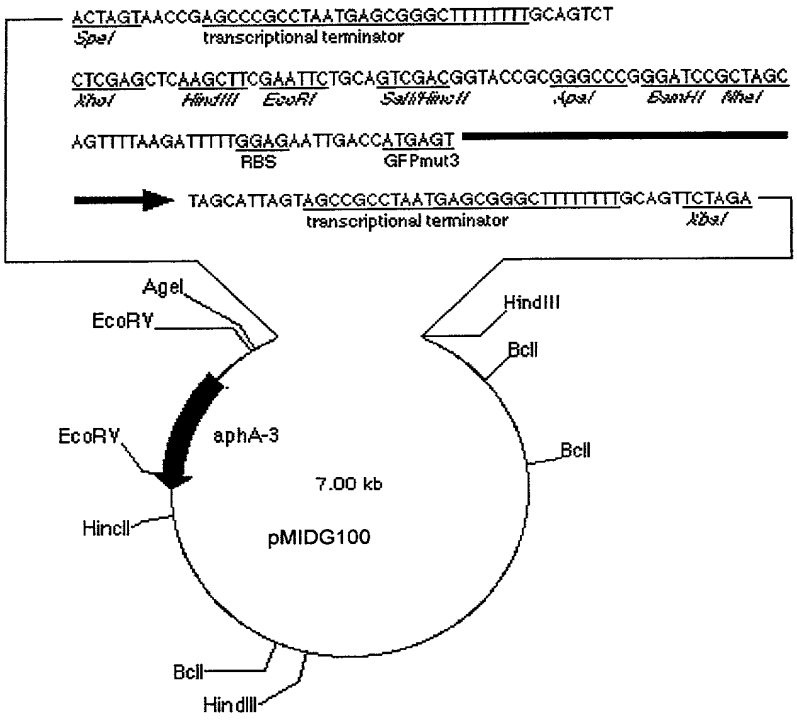
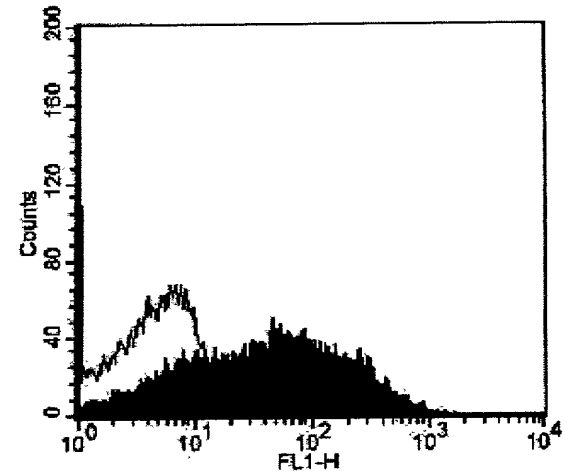

ACTAGTAACCGAGCCCGCCTAATGAGCGGGCTTTTTTTTGCAGTCT
SpeI
transcriptional terminator
CTCGAGCTCAAGCTTCGAATTCTGCAGTCGACGGTACCGCGGGCCCGGGATCCGCTAGC
XhoI HindIII EcoRI SalI/HincII ApaI BamHI NheI
AGTTTTAAGATTTTTGGAGAATTGACCATGAGT
RBS
GFPmut3
TAGCATTAGTAGCCGCCTAATGAGCGGGCTTTTTTTTGCAGTTCTAGA
transcriptional terminator
XbaI
AgeI
EcoRV
HindIII
BclI
EcoRV
aphA-3
BclI
7.00 kb
HincII
pMIDG100
BclI
HindIII

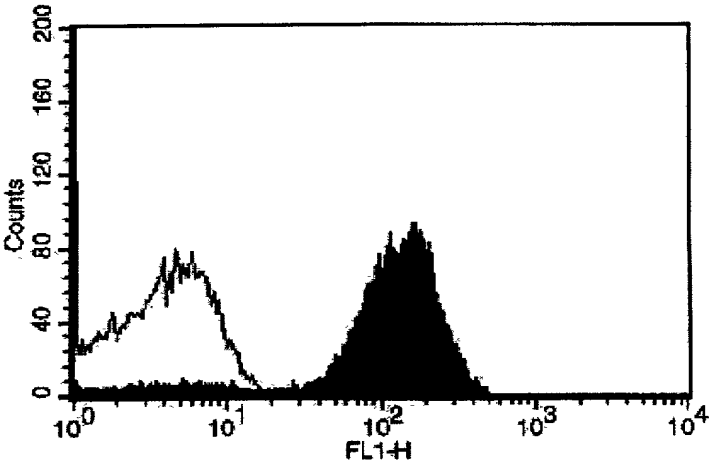
Fig. 8

(A)



Key	Name	Parameter	Gate
	N. cinerea NRL32165 pMIDG100	FL1-H	G1
	N. cinerea NRL32165 pMIDG101	FL1-H	G1

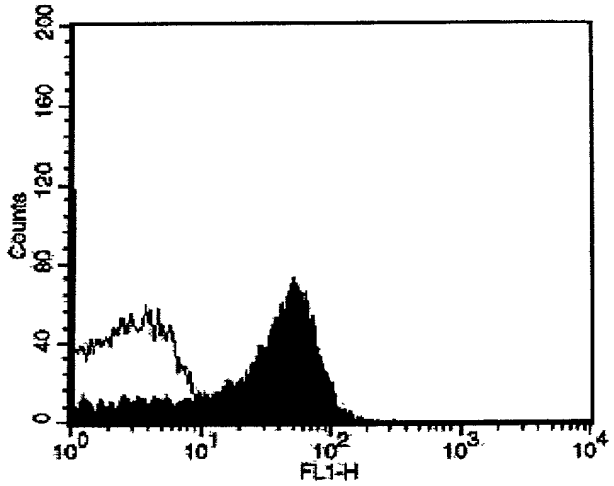
(B)



Key	Name	Parameter	Gate
	N. flava NRL30008 pMIDG100	FL1-H	G1
	N. flava NRL30008 pMIDG101	FL1-H	G1

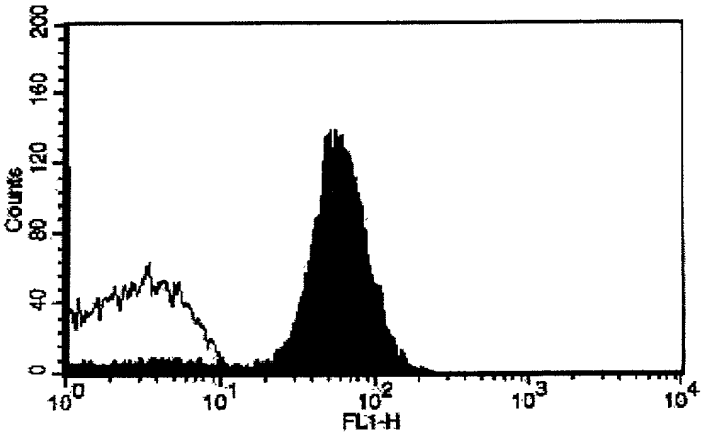
Fig. 8 (continued)

(C)



Key	Name	Parameter	Gate
	N. sicca M98-252234 pMIDG100	FL1-H	G1
	N. sicca M98-252234 pMIDG101	FL1-H	G1

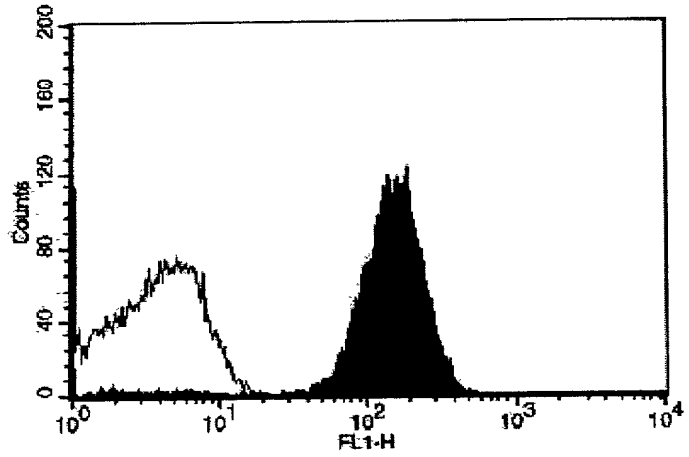
(D)



Key	Name	Parameter	Gate
	N. subtilava NRL30017 pMIDG100	FL1-H	G1
	N. subtilava NRL30017 pMIDG101	FL1-H	G1

Fig. 8 (continued)

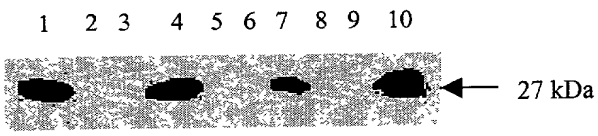
(E)



Key	Name	Parameter	Gate
	N. flavescens 2830 pMIDG100	FL1-H	G1
	N. flavescens 2830 pMIDG101	FL1-H	G1

Fig. 9

(A)



(B)

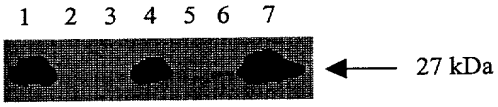


Fig. 10

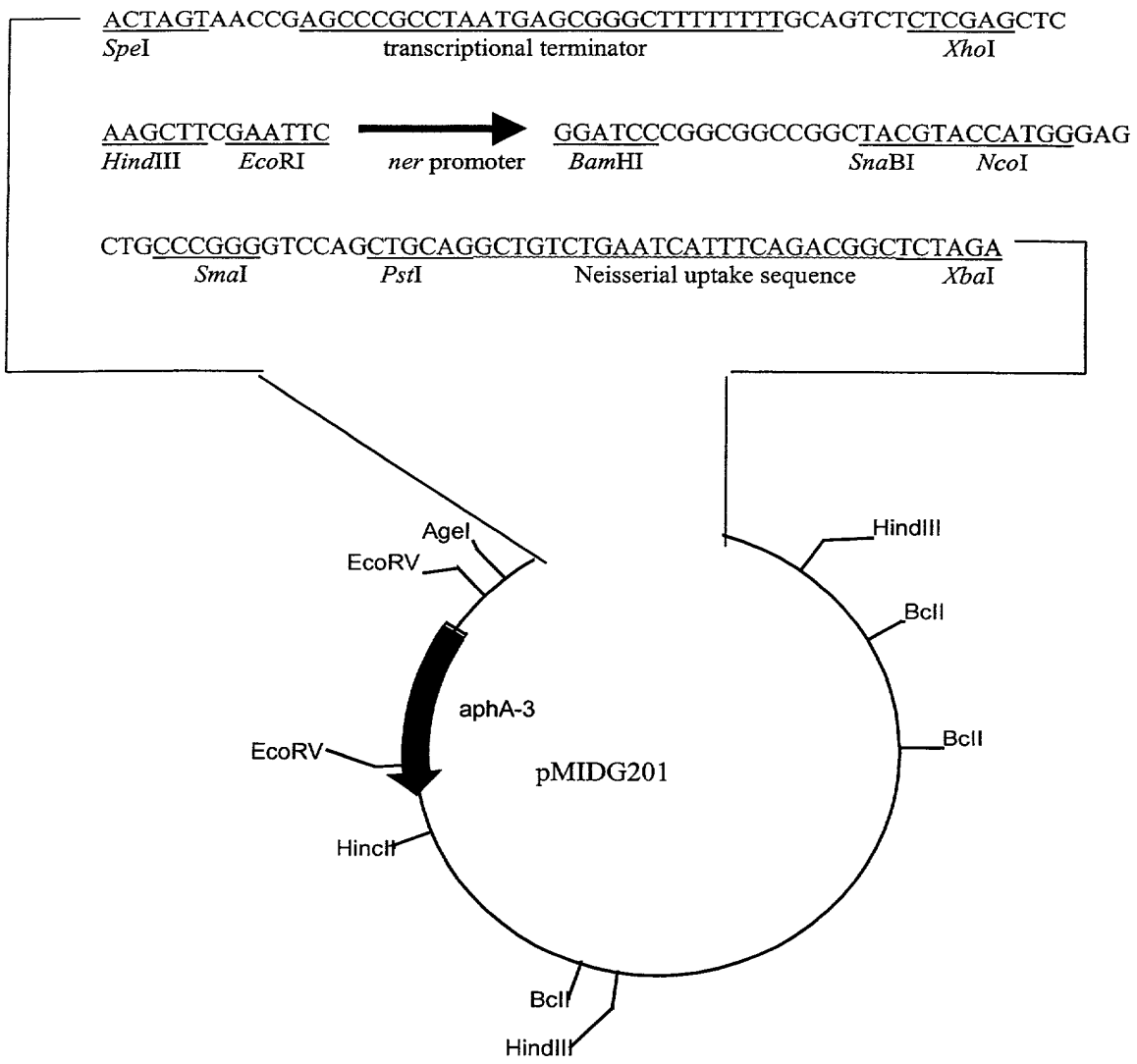
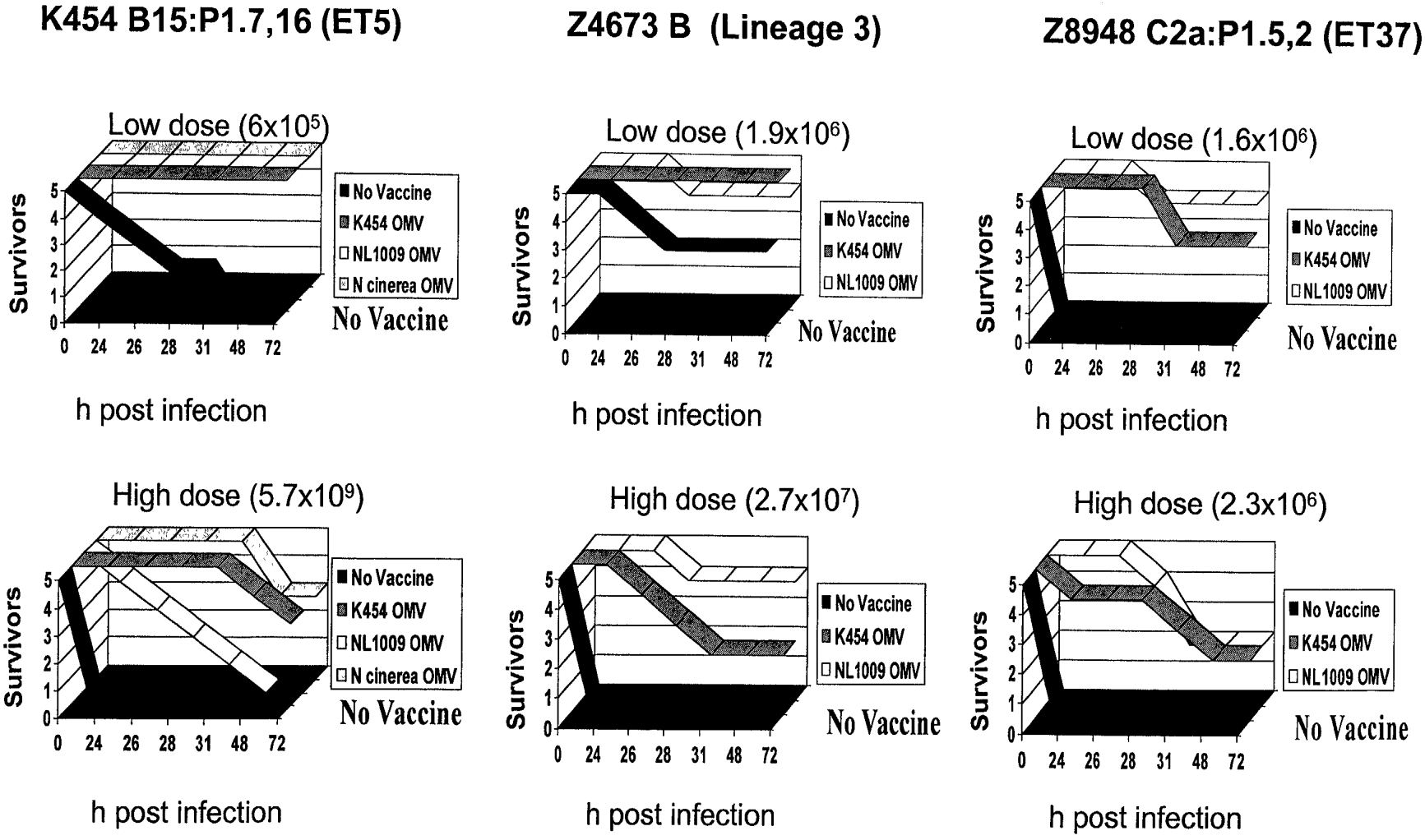

ACTAGTAACCGAGCCCGCCTAATGAGCGGGCTTTTTTTTGCAGTCTCTCGAGCTC
SpeI
transcriptional terminator
XhoI
AAGCTTCGAATTC
HindIII
EcoRI
ner promoter
GGATCCCGGCGGCCGGCTACGTACCATGGGAG
BamHI
SnaBI
NcoI
CTGCCCGGGGTCCAGCTGCAGGCTGTCTGAATCATTTCAGACGGCTCTAGA
SmaI
PstI
Neisserial uptake sequence
XbaI
AgeI
EcoRV
aphA-3
EcoRV
HincII
pMIDG201
BclI
HindIII
HindIII
BclI
BclI

Fig. 11

*Nco*I - tgaccataaaggaaccaaaatatgaaaaaagcacttgccacactgattgccctcgctctcccggccgccgcactggcggaaggcgcatccttta
RBS Start codon
cgtccaagccgatgccgcacacgcaaaagcctcaagctctttaggttctgccaaaggcttcagcccgcgcatctccgcaggctaccgcatcaacgacctccgcttcgccgt
cgattacacgcgctacaaaaactataaagccccatccaccgatttcaaactttacagcatcggcgcgtccgccatttacgacttcgacacccaatcgcccgtcaaaccgtatct
cggcgcgcgcttgagcctcaaccgcgcctccgtcgacttgggcggcagcgacagcttcagccaaacctccatcggcctcggcgtattgacgggcgtaagctatgccgtta
ccccgaatgtcgatttggatgccggctaccgctacaactacatcggcaaagtcaacactgtcaaaaacgtccgttccggcgaactgtccgtcggcgtgcgcgtcaaattctga
tatgcgcctt attctgcaaaccgccgagccttcggcggttttgttttct – *Pst*I
Stop codon Transcription terminator

TOTE80 E8523+660

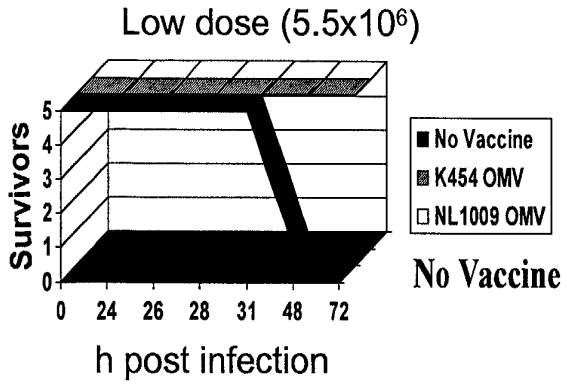
Fig. 12 *N. lactamica* OMVs protect mice against challenge by diverse meningococcal strains

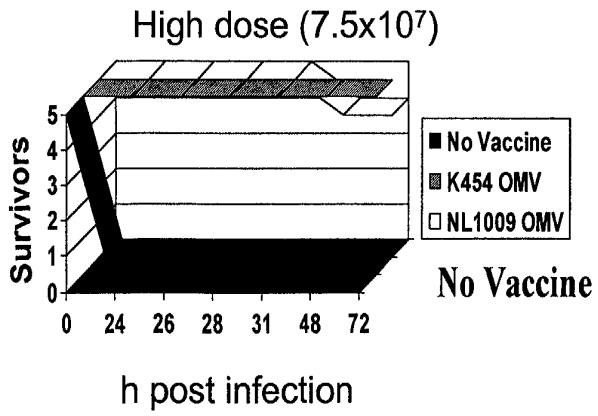


TOTE80 E852N660

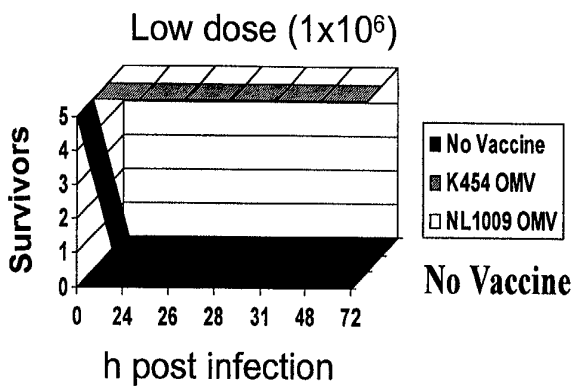
Fig 12 continued

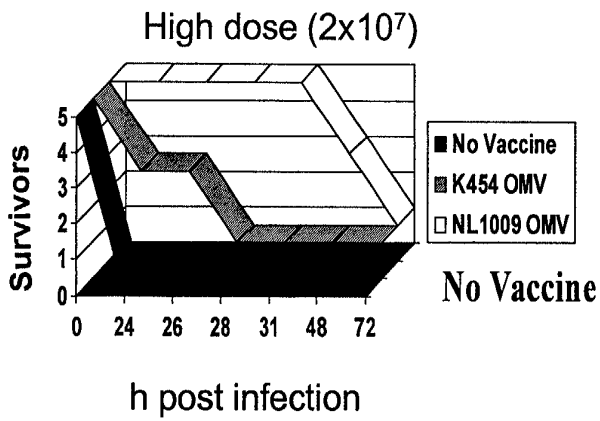
NZ 394/98 B4:P1.6 (Lineage 3)





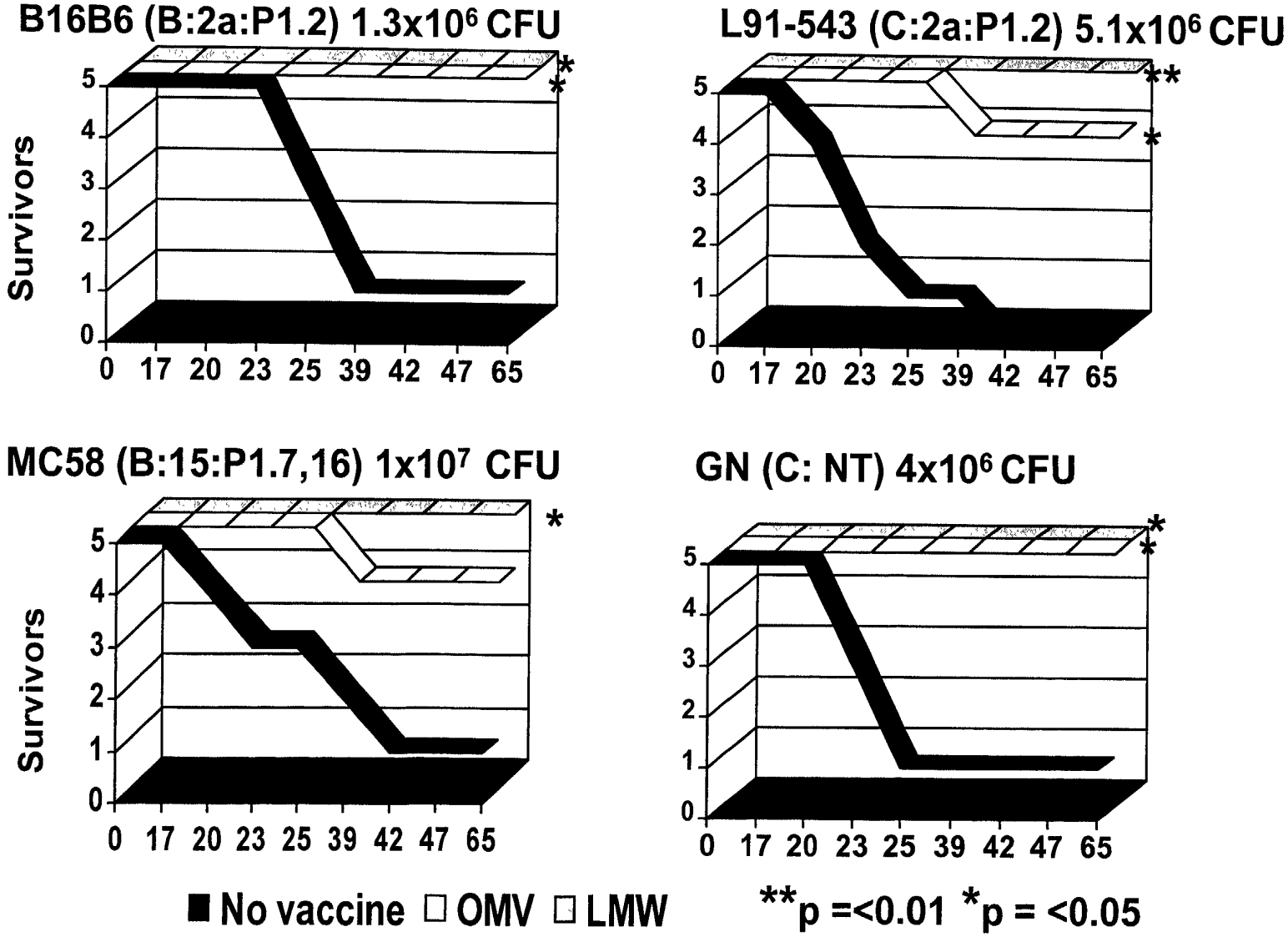
Z4662 B2b:P1.2 (A4)





TOTE80°E852h660

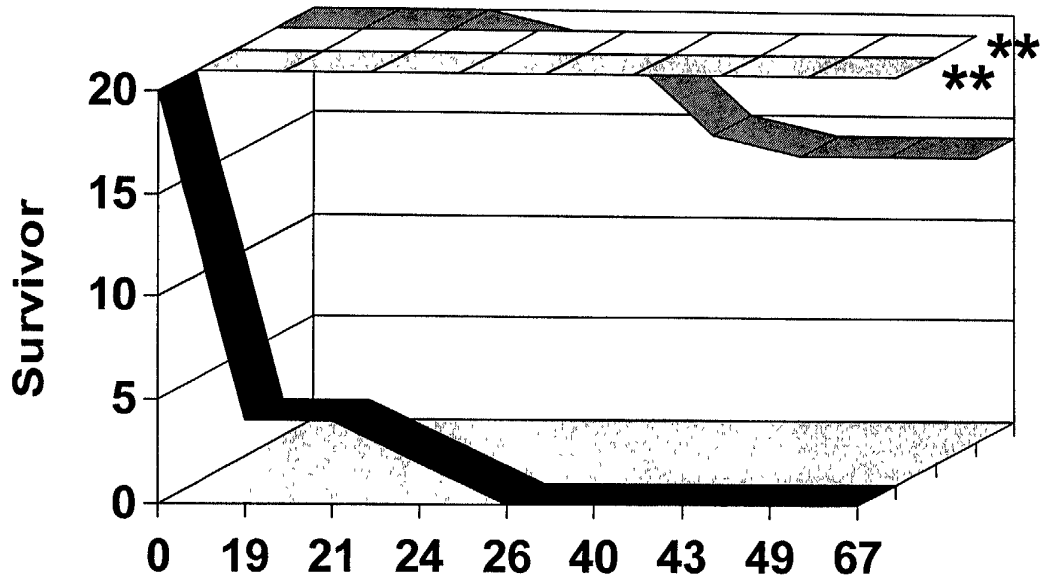
Fig. 13 *Neisseria lactamica* OMVs and low MW protein pool protect mice against meningococcal challenge



TOTE80 E852n660

Fig. 14. *N. lactamica* OMVs with Freund's or alum adjuvant protect mice against serogroup B meningococcal challenge (isolate K454)

Challenge dose 4.35 x 10^6 CFU



** p = < 0.001